



## CARDS AND PIECES FOR A GAME, AND READING APPARATUS

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

The present invention relates to a set of cards for a game having a plurality of types of characters displayed thereon, to a set of pieces for a game molded in a plurality of types of characters, and to a reading apparatus used in a game played using these game cards and pieces.

#### 2. Description of the Related Art

There are known card games that are played in a matching mode using game cards on which a plurality of types of characters are displayed. In this type of card game, each of the cards has a different character as well as a parameter of fighting power, and the like intrinsic to the card, and they are displayed on the card. In this game, each of game players shows a card to an opponent player according to a rule. When, for example, a player shows a card whose parameter of fighting power is smaller than that of an opponent player, the points of the player is reduced by the points of the parameter of the card shown by him or her. Finally, when any one of the players loses all the points, the opponent player wins the game.

The rule described above is simplified for the purpose of explanation, and actually more complex rules are employed. For example, a player shows a plurality of cards, places cards with the characters displayed thereof facing downward so that an opponent player cannot get the view of the characters, or uses

cards with the capabilities of the characters thereof combined.

These games do not always require to use cards, and may be played using pieces formed in the shapes of characters. For example, it is possible to play the games by placing these pieces on a game board and by employing a rule similar to that used in the card games.

In the games played using the cards or the pieces, game players must judge the result of the games and count scores. The rules of the games are not simple in many cases as described above, and further the scores must be counted by the players themselves, which makes it difficult for children before entering elementary school and school children in the lower grades to enjoy the games. This disadvantage can be overcome by making these children to play the games using a game machine that electrically reads the characters of cards and pieces, that counts scores, and that leads the game according to the rules of the games.

As a method of electrically reading the character of a card, there is contemplated a method of providing a digital code such as a barcode, which is set to each character of a card and a piece, therewith and of reading the digital code by a game machine. While the digital code can be relatively simply provided with the card and the piece at a less expensive cost, a mechanism for reading the digital code is expensive, which increases the cost of the game machine.

#### SUMMARY OF THE INVENTION

In view of the problem described above, it is an object

of the present invention to provide a card and a piece for a game the character of which can be read at less expensive cost.

To solve the above problem, a set of cards for a game according to the present invention have a plurality of types of characters displayed thereon, and each of the cards includes a resistance member having a resistance value determined for each character, wherein the resistance value of the resistance member is measured by causing the resistance member to come into contact with an external terminal.

Further, a set of pieces for a game according to the present invention is molded in a plurality of types of characters, and each of the pieces includes a resistance member having a resistance value determined for each character, wherein the resistance value of the resistance member is measured by causing the resistance member to come into contact with external terminals.

In both of the inventions, the card or the piece is provided with a resistance member having a resistance value determined for each character. Thus, a simple and less expensive apparatus for reading the resistance value can identify and read a character.

A reading apparatus according to the present invention includes a terminal for coming into contact with a resistance member having a resistance value determined for each of characters; and a correction means for correcting a parameter set to each of the characters, wherein the type of a character is specified by measuring the resistance value of the resistance member through the terminal and wherein the parameter set to each character is corrected by the correction means based on a difference between

the resistance value determined to the character the type of which is specified and an actually measured resistance value.

The resistance value of the resistance member has an error and does not perfectly agree with a preset resistance value as a reference resistance value, thereby a difference is caused therebetween. While this difference can be restricted to a certain extent, it is difficult to predict the difference of each card or piece. Thus, when a parameter set to each character is corrected based on the difference, a game can be provided with a contingent factor, making the game more interesting.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a view showing an arrangement of a reading apparatus according to a first embodiment of the present invention;

FIG. 2 is a view showing the recording medium into which a card is inserted;

FIGS. 3A, 3B, and 3C are views showing other shapes of a resistance member;

FIG. 4 is a view showing an arrangement of a reading apparatus according to a second embodiment of the present invention;

FIG. 5 is a view showing an arrangement of a game board according to a third embodiment of the present invention;

FIG. 6 is a view showing a structure of a piece;

FIG. 7 is a view showing an arrangement of a reading apparatus according to a fourth embodiment of the present invention; and

FIG. 8 is a view showing a film on which resist ink is applied as a fifth embodiment of the present invention.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIG. 1, reference numeral 1 denotes a reading apparatus, in which a card 2 is inserted into a slit 11 formed on the right side thereof. The card 2 has a band-shaped resistance member 21 that is composed of resist ink and printed on at least one surface thereof. The resistance member 21 has a resistance value previously set according to the character (not shown) printed on each card 2, and the resistance member 21 is printed so as to have the thus set resistance value. When the card 2 is inserted into the slit 11, the reading apparatus 1 detects the resistance value of the resistance member 21 and specifies the type of the character printed on the card 2. The reading apparatus 1 displays the character specified thereby on a display 12, makes progress of a game according to a predetermined rule, and displays the progress of the game on the display 12 together with the character.

Referring to FIG. 2, a pair of electrodes 13 are mounted on the inside of the reading apparatus 1. When the card 2 is inserted into the reading apparatus 1, the electrodes 13 come into contact with both the ends of the resistance member 21, respectively. Both the electrodes 13 are connected to a microcomputer 14 acting as a correcting unit. Both the electrodes 13 are connected to a microcomputer 14 acting as a correcting means. The microcomputer 14 measures the resistance value of the resistance member 21 and specifies the character printed on the card 2 from the measured resistance value. Each character has parameters set thereto that indicate fighting power, defensive power, and the like. The resistance value, which is measured

actually, of the resistance member 21 of a character does not perfectly agree with the resistance value preset to the character, and a difference is caused therebetween. It is assumed, for example, that a character of the card 2 has a resistance value of 10 kilohms and that the resistance value of the character measured by the microcomputer 14 is 10.191 kilohms. Thus, the character has a difference of +0.191 kilohm between the resistance values. If the character has fighting power of 1000 points in correspondence to the resistance value of 10 kilohms, fighting power of 191 point, which is obtained by multiplying the fighting power of 1000 points by the difference, is added to the fighting power of 1000 points, whereby the displayed fight power of the card 2 is corrected from 1000 points to 1191 points.

While the difference is simply multiplied by the fighting power in the above description, the resultant product may be further multiplied by a constant. Further, when the difference is a multiple of, for example, "3", the fighting power corrected by the difference may be multiplied by "10". In the above example, for example, since the difference 191 kilohms is not a multiple of "3", the fighting power is set to 1191 points after it is corrected. However, when the difference is 192 kilohms that is a multiple of "3", the fighting power is set to 2920 points by adding 1920 points, which is obtained by multiplying 191 by "10", to 1000 points. In addition to the above-mentioned, a specific content of correction, which is made by the difference, may be appropriately determined according to the property, and the like of a game.

Incidentally, while the resistance member 21 is printed

by printing the resist ink on the card 2 in the band-shape, when it is desired to increase the resistance value of a resistance member, a resistance member 22 may be printed slenderly in a long size, as shown in, for example, FIG. 3A. When it is desired to reduce the difference of a resistance value, a pair of copper foils 23 may be bonded on the card 2 and a chip resistance 24 may be bridged therebetween and soldered thereto, as shown in, for example, FIG. 2B. The card 2 is not limited to a card composed of paper and may be composed of plastic, and further an IC chip 25 may be buried in the card 2 to store game data. In this case, it is sufficient to print a resistance member 26 by bypassing the IC chip 25. Note that the IC chip 25 may be any of a contact type and a non-contact type.

While the reading apparatus 1 shown in FIG. 1 includes many switches to cope with a game played according to a complex rule, a reading apparatus 3 shown in FIG. 4 is used in a game having a simple rule for simply making a fight using a parameter of each one card. When the card 2 is inserted into a slit 31 formed on the upper surface of the reading apparatus 3, it reads the resistance value of the resistance member 21, similarly to the above reading apparatus 1, corrects the parameter of the card 2 based on a difference, and displays the corrected parameter on a display 32.

While the resistance member is printed on the card in the above embodiments, it is also possible to contain a recording medium in each of pieces 5 and to play a game on a game board 4, as shown in FIG. 5. The game board 4 has terminals 41. Placing

a piece 5 on terminals 41 permits the resistance value of the resistance member contained in the piece 5 to be read and permits the character of the piece 5 to be determined. Then, the parameter of the character is corrected based on the difference of the actual resistance value. A game shown in FIG. 5 is a "Sumou" game, that is, a "Japanese wrestling" game, in which the parameters, each of which corresponds to fighting power, of the characters are corrected, and a character having a larger corrected parameter wins the game. The corrected parameters and the result of the game are shown on a display 42.

As shown in FIG. 6, the game board 4 contains a microcomputer 43 similar to the microcomputer 14 contained in the reading apparatus 1, and the terminals 41 are connected to the microcomputer 43. In contrast, a pair of terminals 51 having the same interval as that of the terminals 41 are attached to the bottom of each piece 5, and both the terminals 51 are connected with each other through a resistance member 52. Accordingly, when the piece 5 is placed on the terminals 41, the terminals 41 come into contact with the terminals 51, thereby the resistance value of the resistance member 52 can be measured by the microcomputer 43.

Further, games other than the games of a fighting mode can be played using the piece 5. As shown in FIG. 7, when terminals 61 are disposed at respective positions of a dwelling model 6 and the piece 5 is placed on a pair of terminals 61 at, for example, an entrance, a microcomputer (not shown) analyzes the character of the piece 5. When the character is a father as a result of analysis, the microcomputer causes a speaker (not shown) to issue



a voice "welcome back father". Further, when the piece 5 is placed on a pair of terminals 61 at a kitchen 62 and it is determined that the character of the piece 5 is a mother, the microcomputer turns on a light in the kitchen 62. When the piece 5 is placed on a pair of terminal 61 on a bed 63 side, the microcomputer turns off a light in a bed room together with a voice "good night" issued from the speaker.

Note that the resistance member is printed on the card 2 by directly applying the resist ink thereon. However, a resistance member 71 may be formed on a film 7 independently from the card 2 by applying resist ink thereto, and the film 7 may be bonded on the card 2.

Incidentally, in the above embodiments, any known circuits may be used as a circuit through which the microcomputer detects the resistance value of the resistance member. Contemplated as the circuit is, for example, a detection circuit, in which known fixed resistors are connected in series with each other and a partial voltage derived from a midpoint between the resistors is detected, a circuit in which a capacitor is charged by a voltage passing through the resistance member and the charging time of the capacitor is measured, a circuit in which the resistance member is assembled in a CR oscillation circuit and the resistance value of the resistance member is measured from the frequency oscillated by the oscillation circuit, and the like.

As apparent from the above description, the reading apparatus of the present invention specifies the character of a card and a piece from the resistance value of the resistance

member. Accordingly, the reading apparatus of the present invention is less expensive than a reading apparatus for specifying the character using a barcode. Further, the present invention can provide a game with a contingent factor. This is because a difference is caused in a resistance value in the form of analog data, and thus a parameter is corrected according to the difference.